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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/025,928	12/26/2001	Mamoru Uchida	35.C16066	7419

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EXAMINER

LEE, PATRICK J

ART UNIT	PAPER NUMBER
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2878

DATE MAILED: 04/23/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/025,928	UCHIDA, MAMORU	
	Examiner	Art Unit	
	Patrick J. Lee	2878	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED. (35 U.S.C. § 133)
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on 26 December 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☐ Claim(s) 1-35 is/are pending in the application.
- 4a) Of the above claim(s) 27-35 is/are withdrawn from consideration.
- 5) ☐ Claim(s) 18-26 is/are allowed.
- 6) ☐ Claim(s) 1-14 and 17 is/are rejected.
- 7) ☐ Claim(s) 15 and 16 is/are objected to.
- 8) ☐ Claim(s) 27-35 are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on 26 December 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) <u>3,6</u> | 6) <input type="checkbox"/> Other: |

DETAILED ACTION

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Drawings

2. Figure 35 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.
3. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference sign(s) not mentioned in the description:

In Figure 2, labels (1030) and (1040) are not described.

In Figure 8, labels (1742) and (1743) are not discussed.

In Figure 9, label (1760) is not described.

In Figure 14, label (2403) is not discussed.

In Figure 18, labels (2401) and (2402) are not discussed.

In Figure 25, label (3604) is not described.

In Figure 27, label (4110) is not described.

In Figure 28, label (4204) is not described.

In Figure 31, labels (4601, 4604-4606, and 4608) are not described.

In Figures 32 and 34, label (4110) is not described.

A proposed drawing correction, corrected drawings, or amendment to the specification to add the reference sign(s) in the description, are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

4. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4) because reference character "2506" in figure 15 has been used to designate both a core layer and an electrode on IC (2503). A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Specification

5. The disclosure is objected to because of the following informalities:

In line 22 of page 39, "1 mm ϕ " should read "1 mm". This error is repeated in a plurality of locations of the specification.

Appropriate correction is required.

Election/Restrictions

6. Restriction to one of the following inventions is required under 35 U.S.C. 121:

- I. Claims 1-26, drawn to the optoelectronic device, classified in class 250, subclass 227.11.
- II. Claims 27-35, drawn to the process of making the optoelectronic device, classified in class 257, subclass 79+.

The inventions are distinct, each from the other because of the following reasons:

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7. Inventions I and II are related as process of making and product made. The inventions are distinct if either or both of the following can be shown: (1) that the process as claimed can be used to make other and materially different product or (2) that the product as claimed can be made by another and materially different process (MPEP § 806.05(f)). In the instant case, while claim 27 starts with "An optoelectronic integrated circuit", by discussing the method in which it is formed, with explicit reference to the flatting of a portion of the substrate makes group II different from group I. In addition, group II does not claim any aspect to the detection of light, which would make it classifiable in the same class as group I.

8. During a telephone conversation with Damond Vadnais on April 7th, 2003, a provisional election was made with traverse to prosecute the invention of the photoelectronic device, claims 1-26. Affirmation of this election must be made by applicant in replying to this Office action. Claims 27-35 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

Claim Rejections - 35 USC § 102

9. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

10. Claims 1 & 5-6 are rejected under 35 U.S.C. 102(e) as being anticipated by Furuyama 6,516,104.

With respect to claims 1 & 5-6, Furuyama discloses an optical wiring device, in which light is emitted or received by photoelectric conversion element active portion (200) of the photoelectric conversion element array (2). A spherical lens (8) as a spherical device is a portion of the light receiving part that partially embeds an optical transmission region comprising of optical wiring substrate (11) and optical guide path (12).

11. Claims 1-4, 8, & 10-11 are rejected under 35 U.S.C. 102(e) as being anticipated by Yoshimura et al 6,343,171.

With respect to claims 1-2, Yoshimura et al disclose an opto-electrical system, in which photodetector (28c', 628) is embedded in active layer (20) as an optical transmission region comprising of optical waveguides (24f, 24x) and cladding layers (21, 23). Electrical traces (30) and electrical interconnect pads (32) as an electric wiring layer are located above the optical transmission region (20).

With respect to claims 3-4, figure 4-1 shows the photodetector (628) disposed immediately next to waveguide (24f) to receive illumination directly from the optical waveguide layer.

With respect to claim 8, Yoshimura et al teach the use of another interconnection pad (32) disposed below the active layer (20) connecting to the electrode (27) attached to the photodetector (628, 28c'), which is electrically connected to interconnection pad

(32) disposed above the active layer (20). It is inherent that vias are used to connect through the optical transmission region (see column 11, lines 11-18).

With respect to claims 10-11, Yoshimura et al disclose the system as described above. In Figure 4-2, Yoshimura et al teach the device being electrically connected to a chip/CSP/MCM as an electronic device through a solder ball connection onto interconnect (32) serving as a wiring layer.

Claim Rejections - 35 USC § 103

12. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

13. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Furuyama 6,516,104 in view of Yoshimura et al 6,343,171.

With respect to claim 9, Furuyama teaches the optical wiring device as described in the discussion of claim 1. Furuyama also teaches the use of a spherical lens (8) as a spherical device in the O/E or E/O conversion, but does not teach the use of an electronic wiring layer disposed above the optical transmission region. However, such is known, as the device of Yoshimura et al teaches it. It would have been obvious to modify the teachings of Furuyama accordingly to dispose an electric wiring layer in order to integrate the optical wiring device to other circuits so that signals can be accurately sent.

14. Claims 12 & 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yoshimura et al 6,343,171 in view of Furuyama 6,516,104.

With respect to claims 12 & 14, Yoshimura et al teach the system as described in the discussion of claim 10. However, the light receiving (or light emitting, depending on the application) part does not have a spherical structure. Furuyama in its optical wiring device teach the embedding of a spherical lens (8) in an optical waveguide layer (11), with the lens (8) being a part of a light receiving/emitting part optically connected to photoelectric active region (200). It would have been a mere matter of obvious design choice to modify Yoshimura et al accordingly as it would allow for light from a plurality of directions to be received or emitted.

15. Claims 13 & 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yoshimura et al 6,343,171.

With respect to claim 13, Yoshimura et al describe the system as discussed in claim 10. However, Yoshimura et al do not explicitly describe the use of an electric circuit for driving a light receiving part or amplifying an electric signal. Such is known and would have been obvious to one of ordinary skill in order to have greater control of the device and to ensure the quality of signals received.

With respect to claim 17, Yoshimura et al do not explicitly disclose the use of a flexible substrate material to make the optoelectronic board. However, such materials are known and would have been obvious to one of ordinary skill in order to allow the device flexibility in shape to be disposed in a different number of situations.

Allowable Subject Matter

16. Claims 15-16 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

17. Claims 18-26 are allowed over the prior art.

18. The following is a statement of reasons for the indication of allowable subject matter:

With respect to claims 15-16, the combination of teachings by Yoshimura et al and Furuyama do not teach or suggest the use of a parallel signal line to aid in the conversion of signals from parallel to serial.

With respect to claims 18-26, Yano et al 5,712,504 disclose an optoelectronic circuit (14) disposed on a circular substrate (151) with an attachment to preamplifier circuit (171). The optoelectronic device does have a pn junction, and is inherently attached to a bias circuit (see column 3, lines 1-9). However, it is neither taught nor suggested that these components be integrated onto a spherical semiconductor substrate. As a result, independent claims 18 & 25, along with dependent claims 19-24 & 26 are allowed over the prior art.

Conclusion

19. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Patrick J. Lee whose telephone number is (703) 305-3871. The examiner can normally be reached on Monday through Friday, 8:00 am to 5:30 pm.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David P. Porta can be reached on (703) 308-4852. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 746-9558 for regular communications and (703) 306-5511 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-1782.

Patrick J. Lee
Examiner
Art Unit 2878

PSL

April 8, 2003


DAVID PORTA
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800